

REMARKS

The present response is intended to be fully responsive to all points of rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application is respectfully requested.

1. Specification

The Examiner objected to the disclosure because the specification has a few instances of blank spaces. In response, Applicant has amended the specification to add the symbol Ω in the blank spaces referred to by the Examiner. The symbol Ω refers to a unit of resistance.

Additionally, Applicant has amended the specification to add the symbol l when referring to a distance. The symbol l is shown in Figure 1 of the drawings. Applicant has also corrected reference numerals "112" and "121" to both read "123." This correction is clear from the context of the specification.

2. Claims

Applicant has canceled claims 1-2, 4-5, 11-15, amended claims 3, 6, 10, and added claims 16-18. Now pending in this application are claims 3, 6-10, and 16-18.

3. Drawings

As noted above, Applicant has corrected reference numeral "121" to read "123" in the specification. This correction is also made in Figure 2.

4. Response to Rejection under 35 U.S.C. 112, first paragraph, second paragraph

The Examiner rejected claims 1-12 under 35 U.S.C. 112, first paragraph. The Examiner indicates that it is unclear in these claims how the desired spacing is derived from the FWHM. In response, Applicant cancels claims 1 and 11 which refer to the FWHM parameter, and cancels claims 2, 4, and 12. Pending claims 6-10, which previously depended on claim 1 now depend on new claim 16. Claims 6-10, and 16 do not refer to the FWHM parameter.

Applicant also adds claim 18. Claim 18 is directed to a spacing between adjacent positions on the first and second media, and is defined in terms of the FWHM of an input pulse. Applicant respectfully points out that the first three paragraphs on page 7 of the specification and in the graph in figure 5 clearly set out how the desired spacing is derived from the FWHM in claim 18. A reading of this text would convey to one skilled in the art that a spacing of at least equal to (in other words "larger than") the distance through which the input signal would travel

in a time corresponding to its FWHM parameter, measured in time, is preferred. For a pulse with FWHM parameter of 0.5 ns and traveling at $c/2$ through the strip line, this spacing is at least 7.5 cm. Therefore, Applicant respectfully submits that new claim 18 does clearly define how the desired spacing is derived from the FWHM.

The Examiner also rejected claim 10 under 35 U.S.C. 112, second paragraph, as being indefinite. In response, Applicant amends claim 10 to define that the first transmission medium comprises a transmission line. The amendment removes the indefiniteness referred to by the Examiner.

5. Response to Rejections under 35 U.S.C. §§ 102(b), 103(a)

The Examiner has rejected claim 15 under 35 U.S.C. § 102(b) as being anticipated by Osterwalder (U.S. Patent No. 4,092,616). Also, the Examiner has rejected claims 1-3, and 11 under 35 U.S.C. § 103 (a) as being unpatentable over Osterwalder, the Examiner has rejected claims 4, 6, 8, 9, and 12 under 35 U.S.C. § 103 (a) as being unpatentable over Osterwalder in view of Schindler (U.S. Patent No. 4,973,918), and the Examiner rejected claim 7 under 35 U.S.C. § 103 (a) as being unpatentable over Osterwalder in view of Schindler and Gruchalla (U.S. Patent No. 4,797,628).

As noted above, Applicant has canceled claims 1-2, 4-5, 11-15, and added new independent claims 16 and 17. Independent claims 16 and 17 are directed to a method and system for suppressing noise generated by an amplifier arrangement. Support for independent claims 16 and 17 may be found in the specification at page 5, lines 5-22, page 6, lines 7-15, and page 7, lines 7-17, and Figure 1, among other places.

As claimed, a signal is input into the amplifier arrangement through a first end of a first signal transmission medium, having constant impedance along its length, and the signal is output from the amplifier arrangement by a second transmission medium, also having constant impedance along its length. Coupling feeds the signal to a plurality of amplifiers extending between respective spaced positions on the first medium and extending between respective spaced positions on the second medium. The coupling provides a plurality of signal paths for the signal between the input and the output of the amplifier arrangement such that all paths have the same signal propagation delay.

At spaced positions on the second medium, the amplifier arrangement causes amplified signals to coherently add and propagate toward the output, and incoherent noise to propagate

toward a termination element at the end of the second medium and toward the output. The noise that propagates toward the termination element is, in turn, dissipated. The dissipation thereby amplifies the input signal and suppresses the noise generated by the amplifier arrangement.

Applicant submits that none of the references cited by the Examiner, separately or in combination, teaches or suggests the claimed invention. None of the references cited by the Examiner, Osterwalder, Schindler or Gruchalla, deals with noise suppression, in the manner claimed.

Moreover, the structures in the cited references are different from the claimed invention. Applicants claimed amplifier arrangement in claims 16 and 17 is a pulse (broadband) amplifier having transmission mediums with constant impedance. Amplified pulses are coherently added at the spaced positions on the second medium and propagate towards the output. At the same time, a train of time spaced pulses propagate in the opposite direction towards the end 14.1. The train of time spaced pulses propagating towards the first end 14.1 of the second medium of the Applicant's amplifier are absorbed or dissipated by termination means 22. Any reflections of the signal and noise are wholly undesirable.

On the other hand, Osterwalder discloses a harmonic (band limited) amplifier having transmission mediums with variable impedance. The impedance of the transmission mediums in Osterwalder is variable because the transmission mediums are stepped. They are so stepped, because in the Osterwalder amplifier arrangement, reflections (at the steps) of the harmonic input signal are used to increase the output power of the amplifier. That is why the transmission line 12 of the Osterwalder amplifier is not so terminated. Hence, Osterwalder does not suppress noise at the transmission line 12, but the noise is reflected towards the output of the amplifier.

Therefore, Applicant submits that the structure of the presently claimed invention is completely different from Osterwalder. Due to the transmission media in Osterwalder that are stepped at quarter wavelengths of the harmonic input signal (hence not a constant impedance along the length of the line) and resulting reflections of the signals moving away from the output, these signals are out of phase and hence cancel one another. In the Applicant's arrangement there are no such reflections but the aforementioned train of pulses propagating away from the output is dissipated at end 14.1 as described above. Applicant's invention relates to a novel arrangement and method of noise suppression.

Applicant submits that neither Schindler nor Gruchalla make up for the deficiency in Osterwalder.

Schindler does not teach an amplifier with constant impedance along the length of the first and second transmission media (see column 3 lines 43 to 50). Schindler appears to relate to an harmonic (band limited) amplifier through the use of the quarter wavelength matching stubs T6, T'6, T7, T'7, T8, T'8, T9 and T'9. The amplifier arrangement is not terminated at the ends opposite the output ports 2 and 3. Arrangements 20a and 20b are drain bias circuits and not termination means as claimed in the applicant's claims 16 and 17.

Moreover, Gruchalla does not teach an amplifier with constant impedance along the length of the first and second transmission media. Furthermore, the unused ends of the media in Gruchalla are not terminated as claimed in the Applicant's independent claims.

For the reasons discussed above neither Osterwalder, Schindler, nor Gruchalla, separately or in combination, disclose or suggest the invention claimed by claims 16 or 17. Claims 3, 6-10, and 18 depend on claims 16 or 17. Therefore, the references cited by the Examiner cannot anticipate or render the invention claimed by claims 3, 6-10, and 18 obvious.

Conclusion


In summary, Applicant respectively submits that each of the pending claims is allowable and therefore respectfully requests favorable reconsideration.

Respectfully submitted,

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Date: October 31, 2003

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